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(54) **SYSTEMS AND METHODS FOR SPECTRALLY DISPERSED ILLUMINATION OPTICAL COHERENCE TOMOGRAPHY**

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See application file for complete search history.

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(57) **ABSTRACT**

Systems and methods are presented for acquisition and processing of spectrally dispersed illumination optical coherence tomographic data. Light from a source is distributed spectrally on the sample, and each acquisition simultaneously provides partial spectral interference information from multiple locations in the sample. Thus for a given spatial point, a single observation will be of a partial spectrum A-scan. When multiple partial spectrum A-scan observations are made at the same point by shifting the spectrum of light on to the tissue, the point can be observed by the entire broadband spectrum of the light source, thereby making it possible to create a full axial resolution A-scan.

19 Claims, 8 Drawing Sheets